

Remarks

The entry of the RCE filed April 6, 2005 and the withdrawal of the finality of the previous Official Action are noted with appreciation. The Applicants also thank the Examiner for the thoughtful consideration of the Amendment, which accompanied the RCE, and the helpful comments regarding the same provided on page 7 of the Official Action.

Claim 11 has been amended to more clearly define the invention in light of the Examiner's helpful comments. The Examiner's observation that the claims did not explicitly require independent movement of multiple masks is acknowledged. According to the Official Action, the claims merely required that the masks be capable of independent movement. In accordance with the Examiner's helpful suggestions, step (a-3) of Claim 11 has been amended to affirmatively recite that the engaging units *engage* and *disengage* (as opposed to being "for engaging and disengaging") each of the deposition masks such that the position of each deposition mask *is* (as opposed to "can be") adjusted relative to the base plate independently of the other deposition masks. In addition, step (a-6) has been amended to affirmatively recite that the step of adjusting the relative position between the base plate and each of the deposition masks is done by *independently* retaining and *independently* moving each of the masks. Thus, the claims now explicitly recite independent movement of the multiple masks.

Claims 11, 12 and 14 have been rejected as allegedly obvious over the theoretical combination of Boudreau, Tang and Duggal ("the Boudreau combination"). Claim 13 has been rejected based on the Boureau combination in further view of Nagayama. The Applicants respectfully submit that the theoretical combination does not disclose, teach or suggest the features of Claim 11. Boudreau does not describe the independent alignment of two separate mask assemblies. The mask assembly of Boudreau is shown as element 20. The mask assembly is aligned with the substrate according to a two-step process involving rough and fine alignment.

Rough alignment is achieved using primary datum pins 28 between the entire mask holder 12, which would hold both mask assemblies if two were provided, and the substrate carrier 30. Thus, both mask assemblies would be aligned in unison during the rough alignment step.

Boudreau also does not describe independent alignment of two masks during the fine alignment step. In Fig. 2 of Boudreau, the interface between the mask assemblies is obscured from view by the frame center support 16. Given a detailed review of Boudreau, one cannot determine if the mask assemblies would be connected, abutting or overlapping, or if there would be space for individual alignment between the mask assemblies. However, based on the positioning of the two centrally disposed secondary datum pins 36 in Fig. 1, it appears that if two mask assemblies were provided, they would be very close or abutting one another. It is not apparent that there would be adequate space between the mask assemblies for independent alignment. Moreover, given a fair reading of the Boudreau specification, one skilled in the art would find no suggestion to independently align two masks during the final alignment step. Instead, both masks are aligned together as the mask holder is engaged with the substrate carrier. Therefore, Boudreau does not teach or suggest the independent alignment of two masks during either the rough or fine alignment steps.

In sharp contrast, Claim 11 recites that the engaging units engage and disengage each of the deposition masks such that the position of each deposition mask is adjusted relative to the base plate independently of the other deposition masks. Further, the claim recites that the relative position between the base plate and each of the deposition masks is adjusted by *independently* retaining and *independently* moving each of the deposition masks relative to the base plate. Boudreau does not describe or suggest these steps. In addition, Tang and Duggal do not teach or suggest the recited steps. Therefore, Claims 11-14 are patentable over the Boudreau

combination. It is respectfully requested that the rejection based on the Boudreau combination be reconsidered and withdrawn.

In addition, Claim 11 is distinguishable from the Beudreau combination because, according to the claim, the relative position between the base plate and each of the deposition masks is adjusted independently *prior to* engaging the integrated mask with the substrate. The Applicants and the Examiner agree that Beudreau does not align the mask assemblies prior to engaging the mask holder with the substrate carrier. However, the Official Action indicates that this distinction is insignificant because any order of performing process steps is *prima facie* obvious. The Applicants respectfully point out that *In re Burhans* (cited in MPEP § 2144.04.IV.C) held that the order of performing process steps is *prima facie* obvious only absent a new or unexpected result. 69 U.S.P.Q. 330, 332 (CCPA 1946). The result of the process of this invention is wholly new and different from that of Beudreau. As pointed out above, the Beudreau process would involve alignment of two mask assemblies simultaneously during the rough and fine alignment steps as the mask holder is engaged with the substrate carrier. The rough alignment step aligns the entire mask holder with the substrate carrier. The fine alignment step would align both mask assemblies using reference points that are fixed relative to one another. Specifically, secondary datum pins 36, which engage with the mask assemblies, are all positioned according to fixed apertures in the substrate holder. There is no mechanism in Beudreau by which one can adjust the position of one mask assembly relative to the other.

According to Claim 11, on the other hand, by independently aligning the masks on the base plate prior to engaging the base plate with the substrate, the masks can be adjusted relative to one another as desired. For example, if in use it is found that one of the masks is forming an EL device on the substrate in an incorrect position relative to the other EL devices, one can disengage the base plate and substrate, adjust the position of the errant mask independently of the

other masks and re-engage the base plate and the substrate. This is possible because the masks are aligned before the base frame is engaged with the substrate. Because Boudreau contemplates alignment at the time the mask holder is engaged with the substrate carrier, fixed reference points on the substrate carrier must be used. Therefore, it is not possible to adjust the positions of the mask assemblies relative to one another. Nor would one skilled in the art expect to achieve the result of masks that are independently adjustable relative to one another, which is achieved by Claim 11, using the apparatus of Boudreau. Thus, the order of performing the process steps according to Claim 11 yields a completely different and unexpected result than that of Boudreau. Under *In re Burhans*, such a new order of performing process steps is not obvious. For this reason also, it is respectfully requested that the rejection based on the Boudreau combination be reconsidered and withdrawn.

Claim 12 has been rejected as allegedly obvious over the theoretical combination of Clark, Tang and Duggal (“the Clark combination”). Claim 13 has been rejected based on the Clark combination in further view of Nagayama. Page 7 of the Official Action acknowledges the Applicants’ contention that the mask segments of Clark are not separately alignable because they are stitched together. However, the Official Action indicates that the masks of Clark are separately alignable because the masks may be unstitched in order to replace a single mask. As such, the Official Action indicates that the masks are capable of independent alignment.

The Applicants respectfully disagree that the masks can be independently aligned as recited in Claim 11. Clark shows a stitched mask made from four mask segments 12 a-d that are secured together. The Applicants acknowledge that the masks can be unstitched in order to replace one or more of the mask segments. However, the mask segments must be restitched back together before the combined mask is engaged with the frame 22. As shown in Fig. 1, the stitched mask is disposed over a single large opening 24 in the frame 22. Each mask segment

depends upon its connection with the other mask segments for support while positioned over the opening. If one of the mask segments were not attached to the other mask segments, there would be no support along two of the edges of the unstitched mask segment. Such a configuration would not be suitable for deposition of organic material onto the substrate. Instead, as taught by Clark, one skilled in the art would understand that the mask segments must be stitched together, and therefore immobile relative to one another, at the time the combined mask is engaged with the frame 22. The only time that a mask could be “adjusted” in Clark is during unstitching and restitching, which is performed before the combined mask is engaged with the frame.¹

Therefore, Clark does not teach or suggest a plurality of engaging units provided on a base plate that engage and disengage each of the deposition masks such that the position of each deposition mask is adjusted relative to the base plate independently of the other deposition masks. Clark also does not teach or suggest the step of adjusting the relative position between the base plate and each of the deposition masks by independently retaining and independently moving each of the deposition masks relative to the base plate. Tang and Duggal also do not describe or suggest these steps. Therefore, Claims 12 and 13 are patentable over the Clark combination.

The subject matter of Claims 12 and 13 is also patentable over the Clark combination because Clark does not teach or suggest a plurality of masks in which each mask is arranged over a separate opening in a base plate. The Applicants note in the Official Action the helpful explanation of the Examiner’s interpretation that Claim 11, from which Claims 12 and 13 depend, did not require each mask to be arranged over a separate opening. The Applicants

¹ The word “adjusted” is enclosed in quotation marks because the Applicants do not agree that the replacement of a mask segment in the apparatus of Clark constitutes an adjusting step, as recited in Claim 11.

respectfully submit that the previous claim language “a base plate which has a plurality of openings on which said deposition masks are arranged respectively”, did in fact mean that the deposition masks are so arranged. Nonetheless, to remove any doubt, step (a-2) of Claim 11 has been amended to affirmatively recite that each of the deposition masks is arranged over a separate opening. The amendment to Claim 11 more clearly defines this invention and further distinguishes it from that shown in Clark. Tang and Duggal also do not describe or suggest these features. For these reasons also, Claims 12 and 13 are patentable over the Clark combination.

For the reasons set forth above and in more detail in the Amendment of April 6, 2005, neither Boudreau nor Clark describe or suggest the elements of amended Claim 11. Tang, Duggal and the other references of record also do not describe or suggest these features. The Applicants respectfully submit that each of the claims is allowable over the Clark and Boudreau combinations. Therefore, it is respectfully requested that each of the rejections and objections set forth in the Official Action be reconsidered and withdrawn. A notice of allowance is solicited. If the Examiner believes that further minor amendment or corrections as to matter of form would advance the case, the Examiner is invited to telephone the Applicants’ undersigned representative.

Respectfully submitted,



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